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PUBLIC HEALTH ENGINEERING ABSTRACTS.

Water-supply statistics of metered cities.—*American City,* vol. 23, No. 6, December, 1920, p. 613–620.

Water-supply statistics from over 1,000 cities in the United States or Canada having at least 1 per cent of their services metered are tabulated to show population, ownership of waterworks, source of supply, number having filtration plants, number using sterilization, average daily and per capita consumption, number having meters at pumps, number of services, per cent services metered, meter rates per 1,000 gallons for domestic and commercial uses, and minimum annual charge.

Water-supply problems in Roumania.—George C. Whipple, professor of sanitary engineering, Harvard University. *American City,* vol. 23, No. 6, December, 1920, p. 580–582.

In Roumania the water supplies vary from the most primitive wells of olden times to modern, well-constructed public works. Rural conditions prevail generally. In most of the villages water is obtained from one or more community wells, which in many cases have substantial well curbs of masonry or concrete, usually round and covered with a roof. Water is drawn up in a bucket operated by a windlass, but well sweeps and other devices are also used.

The cities and towns obtain their water supplies from ground waters, in a few instances from mountain supplies, and in others from the Danube River. The river supplies are filtered. Before the war ozone disinfecting apparatus was used in connection with filtration. On the plains about 30 cities and towns with populations in excess of 2,500, and in the case of 10, over 10,000, have no public water supplies.

Bucharest, the capital of Roumania, has three sources of supply, a filtered river water, and two well-water supplies, with a total maximum daily consumption of 25,000,000 gallons. The hardness of the river water is 40 p. p. m., of the well waters, 120 p. p. m.

At present, lack of facilities for making even minor waterworks repairs results in lack of service. Due to lack of adequate water-supply systems, the country is open to the menace of cholera and other water-borne diseases. In the past cholera has not been prevalent in Roumania, but the typhoid rates in many places have been quite high.

A study of Massachusetts water supplies and the typhoid rate.—H. W. Clark, chief chemist, Massachusetts Department of Public Health. *Journal of New England Water Works Association,* September, 1920.

Preference is stated for a water that is pure rather than an impure water purified. Mr. Clark recounts the great reduction in the typhoid fever rate in Massachusetts during the last 35 years, a decrease from 45 per 100,000 to 2.6 per 100,000; the present rate is stated to be the lowest in the country and as low as in England and Wales. Though the introduction and improvement of public water supplies is considered the largest factor in this decrease, other reforms in sanitation—such as public sewer systems, increased vigilance over milk and food supplies—are given credit for aiding in the reduction. Unlike in many sections of the country, the public water supplies in Massachusetts, with one exception (Lawrence), do not take their raw water from sources which receive the direct discharge of municipal wastes. The installation of public sewer systems in this State is, therefore, of greatest advantage for removing wastes without contaminating water supply sources. The remaining typhoid fever is considered to be caused by the typhoid carriers in the State.

It is reported that 12 per cent of the population of the State uses filtered water and only seven municipalities have chlorine plants in operation at any time. The Massachusetts policy has been to obtain a water supply for every city or town that can be used for all domestic purposes without any purification treatment other than storage. Almost phenomenal success in accomplishing this is claimed with over a hundred surface supplies in use.

A discussion by G. A. Johnson, Frank Green, M. N. Baker, and others, which followed the presentation of the paper, appeared to claim that insufficient emphasis was given by Massachusetts to the safeguarding of water supplies from protected watersheds by filtration and chlorination. It was the opinion of the first two mentioned, that the fine record of Massachusetts for freedom from water-borne diseases would not be maintained without more consideration being accorded to these secondary and tertiary protective measures.

New method of applying alum directly to filter beds at Oshkosh, Wis.—R. A. Maddock, chemist in charge water purification works, Oshkosh, Wis. *Engineering & Contracting*, vol. 54, No. 23, December 8, 1920, p. 553.

The city of Oshkosh obtains its water supply from Lake Winnebago, whose greatest depth is only 28 feet. The resulting turbidity and the suspended matter contained in the water requires careful filtration.

After a series of experiments the writer found the following method of applying alum solution not only saved a large amount of the wash water and alum, but prevented water of an inferior grade from passing into the clear-water basin.

A measured amount of alum solution of known concentration was applied directly to the water in the filter bed, the filter bed having been washed first and the water lowered. The solution was allowed to stand long enough to form a mat of aluminum hydrate over the sand surface before the filter was again put in operation.

The average amount of alum used by this procedure was 40 pounds per day, a saving of an average of 760 pounds per day over the old method. The saving in money for alum and wash water averaged $7,000 per year.

STUDIES IN THE TREATMENT OF MALARIA.

ABSTRACTS OF THE STUDIES WHICH WERE MADE AT THE REQUEST OF THE BRITISH WAR OFFICE.

By BRUCE MAYNE, Biologist, and MILDRED M. MOSS, Microscopist, United States Public Health Service.

These studies were presented in the papers published in the Annals of Tropical Medicine and Parasitology, June 30, 1917, to March 12, 1919. The patients treated were adult males, infected in Macedonia and East Africa 6 to 12 months previously, and all had more or less quinine during that period. Most of them showed clinical symptoms, though a few were treated during an apyrexial period. All showed parasites on the day of beginning treatment or a few days previously. Parasite examinations were made frequently, often daily, during and after treatment. By relapse is meant parasitic relapse. Febrile relapses occurred in all cases of relapse, sometimes a few days later than the first appearance of parasites in the blood.

In estimating the percentage of relapses an arbitrary observation period of 60 days following cessation of treatment was chosen. Whenever it was not possible to follow cases for this period, two percentages are given, the minimum representing the number of relapses actually observed, the maximum including those cases which were not observed for the full 60-day period and which must be counted as possible relapses.

Conclusions Drawn on the Treatment of Malaria.

QUININE.

1. Oral administration of quinine sulphate in doses of 10 grains on each of 2 consecutive days causes only temporary cessation of clinical symptoms and disappearance of parasites from peripheral blood in simple tertian malaria, but has no curative effect. If the doses given on each of the two days do not exceed 30 grains, relapses occur within two or three weeks. A curative effect is manifest when the dose given on each of the two days reaches 45 grains and becomes more marked as it is increased to 90 grains. The dose of 90 grains prevents 62 per cent of cases relapsing (53-165 days' observation).